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# Refractive Indices for the Methyl Esters of the C<sub>12</sub>-C<sub>28</sub> Saturated *n*-Aliphatic Acids

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In connection with a recent investigation on the composition of buckwheat leaf meal fat,<sup>1</sup> refractive index values were required for the methyl esters of the even-number saturated fatty acids up to methyl octacosanoate. No data for these compounds above C<sub>18</sub> were available in the literature. To obtain comparative data, methyl esters of C<sub>18</sub>-C<sub>28</sub><sup>2</sup> acids were prepared by direct esterification of the respective *n*-fatty acids with an excess of absolute methanol, using sulfuric acid as a catalyst. The esters were recrystallized once from ethanol and then from acetone until constant values for refractive indices were obtained. The refractive indices were determined on an Abbe refractometer equipped with a constant-temperature bath and a variable-speed circulating pump. Each recorded value in Table I represents an average of ten readings. The values obtained at 45° for the 12, 14, 16 and 18 carbon atom esters agreed to within 1 or 2 figures in the fourth decimal place of those already reported by Althouse, *et al.*<sup>2</sup> Melting points were taken on a calibrated microscope hot stage.

The identities of these methyl esters were confirmed<sup>3</sup> by comparing the X-ray diffraction patterns with those of Francis and Piper.<sup>4</sup>

TABLE I  
MELTING POINTS AND REFRACTIVE INDICES OF METHYL ESTERS OF SATURATED *n*-ALIPHATIC ACIDS

| Carbon content of acid | M.p., °C. (co.) |                   | Index of refraction |              |
|------------------------|-----------------|-------------------|---------------------|--------------|
|                        | Found           | Lit. <sup>4</sup> | 50°<br>Found        | 80°<br>Found |
| 12                     |                 |                   | 1.4199              | 1.4078       |
| 14                     |                 |                   | 1.4249              | 1.4131       |
| 16                     | 30.4            | 30.55             | 1.4294              | 1.4173       |
| 18                     | 39.0            | 39.1              | 1.4328              | 1.4213       |
| 20                     | 46.5            | 46.6              | 1.4352              | 1.4238       |
| 22                     | 53.2            | 53.3              |                     | 1.4262       |
| 24                     | 59.2            | 58.4              |                     | 1.4283       |
| 26                     | 63.8            | 63.45             |                     | 1.4301       |
| 28                     | 68.5            | 67.5              |                     | 1.4320       |

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(2) P. M. Althouse, G. W. Hunter and H. O. Triebold, *J. Am. Oil Chem. Soc.*, **24**, 257 (1947).

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(4) F. Francis and S. H. Piper, *THIS JOURNAL*, **61**, 577 (1939).

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